Log Event A

Borehole # 10-04-10

Borehole Information

Farm : A	**Tank :** A-104	**Site Number :** 299-E24-68
N-Coord : 41,328	**W-Coord :** 47,848	**TOC Elevation :** 689.09
Water Level, ft :	**Date Drilled :** 5/31/1962	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 125	

Borehole Notes:

This borehole was drilled in May 1962 to a depth of 75 ft using 6-in.-diameter casing. In November 1976, the borehole was deepened to 130 ft and completed at a depth of 125 ft. There is no indication in the driller's log or Chamness and Merz (1993) that the borehole was perforated or grouted.

There is no casing size indicated in the driller's log. For this report, a 6-in.-diameter casing was used to process the SGLS data. It is assumed the casing thickness is 0.280 in., on the basis of the published thickness for schedule-40, 6-in. pipe, as observed by the logging engineer.

The top of the casing is the zero reference for the SGLS. The casing lip is even with the ground surface.

Equipment Information

Logging System : 2	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 05/1995	**Calibration Reference :** GJPO-HAN-5	**Logging Procedure :** P-GJPO-1783

Logging Information

Log Run Number : 1	**Log Run Date :** 09/26/1996	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 124.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 59.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 09/27/1996	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 17.5	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 3	**Log Run Date :** 09/27/1996	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 60.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 16.5	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Borehole 10-04-10

Log Event A

Logging Operation Notes:

This borehole was logged in three log runs. The total logging depth achieved with the SGLS was 124 ft.

Analysis Information

Analyst : R.R. Spatz

Data Processing Reference : MAC-VZCP 1.7.9 Analysis Date : 03/24/1998

Analysis Notes :

The pre- and post-survey field verification spectra for all logging runs met the acceptance criteria established for peak shape and system efficiency. The energy calibration and peak-shape calibration from these spectra were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging.

A casing correction factor for 0.280-in.-thick casing was applied to the log data during the analysis process.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations. Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Results/Interpretations:

The only man-made radionuclide detected in this borehole was Cs-137. Cs-137 contamination was detected continuously from the ground surface to 6 ft and the concentrations ranged from 0.3 to 1.5 pCi/g. The maximum Cs-137 concentration for this borehole was 1.5 pCi/g at 5 ft. Cs-137 contamination occurs intermittently from 6 to 9.5 ft at concentrations just above the MDL (0.2 pCi/g). Isolated detections occur at 50.5 ft and the bottom of the borehole (124 ft) at 0.3 pCi/g.

The K-40 concentrations decrease at about 15 ft from a general background of 14 pCi/g above this depth to about 12 pCi/g from 15 to 55 ft. Between 55 and 62 ft, the K-40 concentrations increase to about 16 pCi/g. Below 62 ft, the K-40 concentrations decrease to about 12 pCi/g and remain fairly constant to the bottom of the borehole (124.5 ft).

Shape factor analysis was not used to determine the distribution of Cs-137 contamination around this borehloe. The count rates were below the 1 cps limit required to produce interpretable CsSF1 results.